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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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E I du Pont de Nemours and Company				
Legal Patents				
1007 Market Street				
Wilmington, DE 19898				
		EXAMINER		
		FLETCHER III, WILLIAM P		
		ART UNIT PAPER NUMBER		
		1762		

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/980,718	BOSCH ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	William P. Fletcher III	1762	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 November 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-24 is/are allowed.
- 6) ☒ Claim(s) 1-20 and 25-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |                                                                                                              |                                                                             |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
  - (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
  - (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
  - (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
  - (e) BACKGROUND OF THE INVENTION.
    - (1) Field of the Invention.
    - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
  - (f) BRIEF SUMMARY OF THE INVENTION.
  - (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
  - (h) DETAILED DESCRIPTION OF THE INVENTION.
  - (i) CLAIM OR CLAIMS (commencing on a separate sheet).
  - (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
  - (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).
2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: AQUEOUS DISPERSION COMPRISING POLYURETHANE-BASED RESIN PARTICLES AND WATER-INSOLUBLE CELLULOSE ESTER, METHODS FOR PREPARING AND USING SAME, AND ARTICLES COATED WITH SAME.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 17 – 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claim 17 recites that the polyurethane resin has a particular content of siloxane bridges. Since none of the preceding claims recite a siloxane compound or siloxane precursor, it is unclear how the siloxane bridges are introduced into the resin. The indefiniteness of this claim is further compounded by applicant's disclosure of three chain-lengthening embodiments, all of which use water as a chain-lengthening agent but only one of which results in the formation of siloxane bridges.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 12 – 16, 18 – 20, 25, 26, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Wenzel et al. (US 4,306,998 A).**

Wenzel teaches an aqueous dispersion comprising a plurality of polyurethane resin particles into which has been incorporated about 0.3 to 50 wt.-% water-insoluble cellulose ester [abstract; c. 2, l. 40 – c. 5, l. 37; c. 6, l. 1 – c. 7, l. 18]. The polyurethane resin is a chain-

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lengthened carboxy-functional polyurethane pre-polymer [c. 3, ll. 8 – 61]. The prepolymers are chain-lengthened with water or polyamine [c. 3, ll. 56 – 61]. Wenzel explicitly states that the prepolymers are “preferably compounds which have a substantially linear molecular structure” [c. 3, ll. 39 & 40]. (Since prepolymers are considered either linear or branched, it is the examiner’s position that Wenzel’s teaching anticipates both linear *and* branched prepolymers.) The cellulose esters may be cellulose propionate or cellulose acetobutyrate [c. 5, ll. 30 – 36]. The dispersion, which can be used to coat a variety of substrates, may also include pigments and fillers [c. 6, ll. 35 – 53]. Wenzel also teaches a substrate coated with the dispersion [c. 7, top and Examples].

With specific respect to claim 14, as noted above, the prepolymers contain carboxyl groups and functional groups capable of chain lengthening and the dispersed prepolymers may be subsequently modified with isocyanates [c. 3, ll. 35 – 61 and c. 6, ll. 61 – 64]. Further, applicant has not defined what is meant by “capable of reacting with polyisocyanates.” Absent clear and convincing evidence to the contrary, it is the examiner’s position that the Wenzel’s prepolymers inherently contain active hydrogen and carboxyl groups capable of reacting with polyisocyanates.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. **Claims 17, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wenzel et al. (US 4,306,998 A).**

With respect to claim 17, Wenzel does not teach the particular physical properties of the polymer recited in this claim. It is the examiner's position that properties such as number-average molecular weight, OH number, and acid number are result-effective variables effecting the coating characteristics (viscosity, for example) and that it well-known to adjust these properties to give a desired coating composition. Absent a clear and convincing showing of unexpected results demonstrating the criticality of the claimed ranges, it would have been obvious to one of ordinary skill in the art to modify the composition of Wenzel so as to optimize these result-effective variables by routine experimentation [see MPEP § 2144.05(II)]. Additionally, the examiner notes that Wenzel does teach that the molecular weights of the prepolymers are in the range of less than about 20,000 [c. 3, top]. Consequently, molecular weights on the order of those claimed by applicant are clearly suggested by this teaching.

With respect to claim 27, as noted above, Wenzel does teach that the composition may contain pigment. Wenzel does not specify those pigments claimed by applicant. It is the

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examiner's position that pigments are either organic or inorganic. Consequently, it would have been obvious to one of ordinary skill in the art to modify the composition of Wenzel so as to utilize, as the pigment, either an organic or inorganic pigment, since those are the only two choices one of ordinary skill in the art would have had.

With respect to claim 28, as noted above. Wenzel teaches that the dispersion may also include filler.

10. **Claims 17 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wenzel et al. (US 4,306,998 A), as applied to claim 16 above, in further view of Vogt-Birnbrich et al. (WO 95/28429 A1, English-language abstract).**

The teaching of Wenzel is described above. The examiner notes that Wenzel's prepolymers contain a proportion of ionic groups and/or groups that can be converted into ionic groups [c. 3, ll. 8 – 34]. Wenzel does not teach that the prepolymers are chain-lengthened utilizing siloxane groups and water.

The Vogt-Birnbrich abstract teaches:

The disclosure relates to an aqueous dispersion of one or more polyurethane resins with a number average mean molecular weight (M<sub>n</sub>) of 2500-1000 000, containing 2-150 mMol of siloxane bridges (-Si-O-Si-) in each 100 g of solid resin, a hydroxyl number of 0-100 and a proportion of ionic groups, groups which can be converted to ionic groups and/or hydrophilic groups of 5-200 milli-Equivalents for 100 g of solid resin, as well as the process for producing the said dispersion by chain extension of a polyurethane prepolymer containing ionic groups, groups which are enabled to form ions and/or hydrophilic groups, the polyurethane prepolymer containing at least one R'OSi-group, in which R' is C<sub>1-8</sub> alkyl or C(O)R''' and R''' is C<sub>1-10</sub> alkyl. The chain extension is effected by the addition of water. The aqueous dispersion is suitable for use in aqueous coatings, especially those suitable as foundation varnish for multiple-coat varnishes.

Consequently, it would have been obvious to one of ordinary skill in the art to modify the composition of Wenzel so as to utilize, as the prepolymer and the chain-lengthener those disclosed by the Vogt-Birnbrich abstract. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully forming a polyurethane prepolymer dispersion suitable for use in a coating composition.

Although the Vogt-Birnbrich abstract does not teach a particular acid number, it is the examiner's position that such is a result-effective variable effecting the coating characteristics (viscosity, for example) and that it well-known to adjust this property to give a desired coating composition. Absent a clear and convincing showing of unexpected results demonstrating the criticality of the claimed range, it would have been obvious to one of ordinary skill in the art to modify the composition of Wenzel in view of the Vogt-Birnbrich abstract so as to optimize this result-effective variables by routine experimentation [see MPEP § 2144.05(II)].

As noted above, with respect to claims 18 and 19, Wenzel explicitly states that the prepolymers are "preferably compounds which have a substantially linear molecular structure" [c. 3, ll. 39 & 40]. (Since prepolymers are considered either linear or branched, it is the examiner's position that Wenzel's teaching anticipates both linear *and* branched prepolymers.)

11. **Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wenzel et al. (US 4,306,998 A), as applied to claim 12 above, in further view of Das et al. (WO 97/49739 A1).**

The teaching of Wenzel is described above. In particular, this reference teaches: "The dispersions...are particularly suitable for use as coating compounds for any flexible or rigid substrate such as leather, textiles, rubber, synthetic materials such as PVC, glass, metals, paper or wood, where they may fulfill the function of a finish, lacquer or adhesive" [c. 6, l. 64 – c. 7, l. 2]. Wenzel does not teach applying the aqueous dispersion as a base lacquer and applying a clear lacquer layer.

Das teaches aqueous cellulose ester particle dispersions may be used as the colored or pigmented base coat in color-plus-clear coating systems [p. 1, ll. 8 – 12]. In such a system, the



base coat is over-coated with a transparent or clear lacquer layer [p. 1, ll. 8 – 12]. Cellulose ester particle dispersions eliminate coating defects through proper rheological control [p. 1, ll. 18 – 25].

Since Wenzel teaches that the pigmented dispersion may be used as a lacquer coating, it would have been obvious to one of ordinary skill in the art to utilize the composition of Wenzel as the pigmented base coat in a color-plus-clear coating method. One of ordinary skill in the art would have been motivated to do so by the suggestion of Das that doing so would eliminate coating defects.

***Allowable Subject Matter***

12. Claims 21 – 24 are allowed.

13. The following is a statement of reasons for the indication of allowable subject matter: Wenzel represents the closest prior art. This reference discloses: “The [cellulose ester] are generally stirred into the liquid or molten [prepolymer]” [c. 4, ll. 19 – 40]. The prior art neither teaches nor suggests the methods of claims 21 – 24 in which prepolymer resin *particles* are mixed with the cellulose ester.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (703) 308-7956. The examiner can normally be reached on Monday through Friday, 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Shrive P. Beck can be reached on (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*WPF 10/30/03*

William P. Fletcher III  
Examiner  
Art Unit 1762



SHRIVE P. BECK  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

Non-final Rejection